Amendments to the Claims

Please amend Claims 1, 25 and 27. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Currently Amended) A method for detecting, identifying and quantifying an oxidizable contaminant in a gas stream at a low concentration level which comprises:
   a) subjecting at least a portion of said gas stream to an oxidation reaction under conditions sufficient to effect complete oxidation of said oxidizable contaminant to an oxidized product whose presence is more readily detected and quantified than are said oxidizable contaminants at said concentration in the gas stream;
   b) determining the quantity of oxidized product in said portion of said gas stream after complete oxidation; and
   c) determining the concentration and identity of said oxidizable contaminant in said portion of said gas stream from said quantity of oxidized product and the stoichiometry of the oxidation reaction,

   wherein the low concentration level of oxidizable contaminant present in said gas stream is less than 3000 ppt.

2. (Original) A method as in Claim 1 wherein said oxidizable contaminant is selected from the group consisting of hydrocarbons, siloxanes, organosilanes, organosulfides, organophosphides and organohalides.

3. (Previously presented) A method as in Claim 1 wherein the low concentration level of oxidizable contaminant is less than 1000 ppt.

4. (Previously presented) A method as in Claim 3 wherein the low concentration level of oxidizable contaminant is less than 500 ppt.

5. (Previously presented) A method as in Claim 4 wherein the low concentration level of oxidizable contaminant is less than 100 ppt.

6. (Previously presented) A method as in Claim 5 wherein the low concentration level of oxidizable contaminant is less than 10 ppt.

7. (Previously presented) A method as in Claim 1 wherein step a) comprises contacting said portion of said gas stream with an oxidation catalyst under conditions sufficient to effect complete catalytic oxidation of said oxidizable contaminant to said oxidized product.

8. (Original) A method as in Claim 7 wherein said oxidation catalyst comprises a transition metal or lanthanide metal or combinations thereof.

9. (Original) A method as in Claim 7 wherein said oxidation catalyst is supported on an oxygen-rich inorganic substrate or present as an alloy or solid solution.

10. (Original) A method as in Claim 9 wherein said substrate comprises zirconia, ceria, or alumina.

11. (Original) A method as in Claim 1 wherein said oxidation product has a higher concentration in said portion after oxidation than did said contaminant prior to oxidation.

12. (Original) A method as in Claim 1 wherein said oxidation product is effectively detectable and quantifiable at lower concentrations in said portion than is said contaminant.

13. (Original) A method as in Claim 1 wherein sufficient oxygen for said complete oxidation comprises oxygen or air which is present in said portion of said gas stream.

14. (Original) A method as in Claim 1 wherein said portion of said gas stream contains insufficient oxygen for said complete oxidation and said method further comprises adding free oxygen or air to said portion prior to said complete oxidation.

15. (Original) A method as in Claim 1 wherein said contaminant comprises a hydrocarbon at a concentration of less than 3000 ppt and said oxidation product comprises at least one of water or carbon dioxide.

16. (Previously presented) A method as in Claim 1 wherein said method detects and quantifies at least one oxidizable contaminant from a plurality of oxidizable contaminants in said gas stream.

17. (Previously presented) A method for selectively quantifying concentrations of oxidizable contaminants within a plurality of contaminants in a gas stream, comprising:

a) subjecting at least a portion of said gas stream to an oxidation reaction under conditions sufficient to effect complete oxidation of said oxidizable contaminants to oxidized products whose presence is more readily detected and quantified than are said oxidizable contaminants at said concentrations in said gas stream, the conditions such that less than all of said plurality of contaminants are completely oxidized;

b) determining the quantity of oxidized products in said portion of said gas stream after complete oxidation of said oxidizable contaminants; and

c) determining said concentrations of said oxidizable contaminants in said portion of said gas stream from said quantity of oxidized products and the stoichiometry of the oxidation reaction.

18. (Previously presented) A method as in Claim 17 wherein step a) comprises contacting said portion of said gas stream with an oxidation catalyst, and controlling conditions to maintain temperature such that contacting occurs within a temperature range at which less than all of said plurality of contaminants are catalytically oxidized.

19. (Previously presented) A method for detecting and identifying an oxidizable contaminant in a gas stream at a low concentration level, comprising:

a) subjecting at least a portion of said gas stream to an oxidation reaction under conditions sufficient to effect complete oxidation of said oxidizable contaminant

to an oxidized product whose presence is more readily detected and quantified than is said oxidizable contaminant at said low concentration level, said contaminant comprises a hydrocarbon of unknown identity;

b) determining the quantity of oxidized product in said portion of said gas stream after complete oxidation; and

c) determining the saturation ratio of said hydrocarbon from analysis of the oxidized product, such that identity of said hydrocarbon may thereafter be determined.

20. (Previously presented) A method as in Claim 1 wherein said steps a), b) and c) are performed using a compact transportable system.

21. (Previously presented) A method for selectively quantifying a concentration of an oxidizable contaminant from a plurality of contaminants in a gas stream, comprising:

a) subjecting at least a portion of the gas stream to an oxidation reaction under conditions sufficient to effect complete oxidation of an oxidizable contaminant to an oxidized product, the conditions such that less than the plurality of contaminants is completely oxidized;

b) determining the quantity of oxidized product in the portion of the gas stream after complete oxidation; and

c) determining the concentration of the oxidizable contaminant in the portion of the gas stream from the quantity of oxidized product and the stoichiometry of the oxidation reaction.

22. (Previously presented) The method of Claim 21 wherein more than one oxidizable contaminant is completely oxidized.

23. (Previously presented) The method of Claim 21 wherein step a) comprises contacting said portion of said gas stream with an oxidation catalyst, and controlling conditions to maintain temperature such that contacting occurs within a temperature range at which less than all of said plurality of contaminants are catalytically oxidized.

24. (Previously presented) A method for detecting and identifying an oxidizable contaminant in a gas stream, comprising:

a) subjecting at least a portion of the gas stream to an oxidation reaction under conditions sufficient to effect complete oxidation of the oxidizable contaminant to an oxidized product, the oxidizable contaminant comprising a hydrocarbon of unknown identity;

b) determining the quantity of oxidized product in said portion of said gas stream after complete oxidation; and

c) determining the saturation ratio of said hydrocarbon from analysis of the oxidized product, such that identity of said hydrocarbon may thereafter be determined.

25. (Currently Amended) A method for detecting and quantifying at least one heavy hydrocarbon contaminant in a gas stream at a low concentration level, comprising:

a) subjecting at least a portion of the gas stream to an oxidation reaction in the presence of an oxidation catalyst under conditions sufficient to effect complete oxidation of at least one heavy hydrocarbon contaminant to carbon dioxide and water, but not under conditions sufficient to effect complete oxidation of a light hydrocarbon, if present;

b) determining the quantity of at least one of carbon dioxide and water in the portion of the gas stream after the oxidation reaction; and

c) determining the concentration of at least one heavy hydrocarbon contaminant in the portion of the gas stream from the stoichiometry of the oxidation reaction and at least one of the quantity of carbon dioxide and the quantity of water,

wherein the low concentration level is less than 3000 ppt.

26. (Previously presented) A method for detecting and quantifying an oxidizable contaminant in a gas stream at a low concentration level, comprising:

a) subjecting at least a portion of the gas stream to an oxidation reaction under conditions sufficient to effect complete oxidation of the oxidizable contaminant to at least one oxidized product;

b) determining the quantity of an oxidized product in the portion of the gas stream after the oxidation reaction; and

c) determining the concentration of the oxidizable contaminant in the portion of the gas stream from the quantity of oxidized product and the stoichiometry of the oxidation reaction,

wherein the low concentration level is below a detectable concentration limit of the oxidizable contaminant using flame ionization detection.

27. (Currently Amended) A method for detecting, identifying and quantifying an oxidizable contaminant in a gas stream at a low concentration level, comprising:

a) subjecting at least a portion of the gas stream to an oxidation reaction under conditions sufficient to produce carbon dioxide and water;

b) determining the quantity of at least one of carbon dioxide and water in the portion of the gas stream after the oxidation reaction; and

c) determining the concentration and identity of the oxidizable contaminant in the portion of the gas stream from the stoichiometry of the oxidation reaction and at least one of the quantity of carbon dioxide and the quantity of water,

wherein the low concentration level is less than 3000 ppt.